BASRTL

BASENDDFS
LIS

BAS$END_DFS   C 6
16-Sep-1984 00:22:24   VAX-11 Bliss-32 V4.0-742   Page 1
14-Sep-1984 11:54:55   [BASRTL.SRC]BASENDDFS.B32;1   (1)

```
 1    0001  0  MODULE BAS$END_DFS (
 2    0002  0                  IDENT = '1-004'              ! File: BASENDDFS.B32  Edit:MDL1004
 3    0003  0                  ) =
 4    0004  1  BEGIN
 5    0005  1
 6    0006  1  !****************************************************************
 7    0007  1  !*                                                              *
 8    0008  1  !*    COPYRIGHT (c) 1978, 1980, 1982, 1984 BY                   *
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25    0025  1  !*                                                              *
26    0026  1  !*                                                              *
27    0027  1  !****************************************************************
28    0028  1  !
29    0029  1  !
30    0030  1
31    0031  1  !++
32    0032  1  ! FACILITY:  BASIC-PLUS-2 Frame Support
33    0033  1  !
34    0034  1  ! ABSTRACT:
35    0035  1  !
36    0036  1  !        These routines set up and tear down frames for BASIC-PLUS-2.
37    0037  1  !        Frames are used for main routines, external functions,
38    0038  1  !        external subroutines, internal functions (both DEFs and DEF*s)
39    0039  1  !        internal subroutines (GOSUBs) and condition handlers.
40    0040  1  !
41    0041  1  ! ENVIRONMENT:  VAX-11 user mode
42    0042  1  !
43    0043  1  ! AUTHOR: John Sauter, CREATION DATE: 10-Oct-78
44    0044  1  !
45    0045  1  ! MODIFIED BY:
46    0046  1  !
47    0047  1  !        , : VERSION
48    0048  1  !
49    0049  1  ! 1-001 - Original.  This is just a skeleton.
50    0050  1  ! 1-002 - Change LIB$S and OTS$S to STR$.  JBS 21-MAY-1979
51    0051  1  ! 1-003 - Code this routine, based on BAS$END_DEF.  JBS 03-AUG-1979
52    0052  1  ! 1-004 - signal FNEWITFUN for kinds of frames that we know about, rather
53    0053  1  !           than simply signalling PROLOSSOR blindly.  MDL 22-Feb-1984
54    0054  1  !--
55    0055  1
56    0056  1  !
57    0057  1  !<BLF/PAGE>
```

```
  59      0058  1  !
  60      0059  1  !  SWITCHES:
  61      0060  1  !
  62      0061  1
  63      0062  1  SWITCHES ADDRESSING_MODE (EXTERNAL = GENERAL, NONEXTERNAL = WORD_RELATIVE);
  64      0063  1
  65      0064  1  !
  66      0065  1  !  LINKAGES:
  67      0066  1  !
  68      0067  1
  69      0068  1  LINKAGE
  70      0069  1      BAS$INIT_LINK = JSB (REGISTER = 0, REGISTER = 1, REGISTER = 2) :    !
  71      0070  1      GLOBAL (BSF$A_MAJOR_STG = 11, BSF$A_MINOR_STG = 10, BSF$A_TEMP_STG = 9)      !
  72      0071  1      NOPRESERVE (8, 7, 6, 5, 4, 3, 2, 1, 0);
  73      0072  1
  74      0073  1  REQUIRE 'RTLIN:STRLNK';                            ! String facility linkages
  75      0258  1
  76      0259  1  !
  77      0260  1  !  TABLE OF CONTENTS:
  78      0261  1  !
  79      0262  1
  80      0263  1  FORWARD ROUTINE
  81      0264  1      BAS$END_DFS_R8 : NOVALUE BAS$INIT_LINK;        ! end DEF*
  82      0265  1
  83      0266  1  !
  84      0267  1  !  INCLUDE FILES:
  85      0268  1  !
  86      0269  1
  87      0270  1  REQUIRE 'RTLIN:RTLPSECT';                          ! macros for defing psects
  88      0365  1
  89      0366  1  REQUIRE 'RTLIN:BASFRAME';                          ! Define frame structure
  90      0569  1
  91      0570  1  REQUIRE 'RTLIN:BASINARG';                          ! Define argument list
  92      0654  1
  93      0655  1  !
  94      0656  1  !  MACROS:
  95      0657  1  !
  96      0658  1  !      NONE
  97      0659  1  !
  98      0660  1  !  EQUATED SYMBOLS:
  99      0661  1  !
 100      0662  1  !      NONE
 101      0663  1  !
 102      0664  1  !  PSECTS:
 103      0665  1
 104      0666  1  DECLARE_PSECTS (BAS);                              ! declare psects for BAS$ facility
 105      0667  1
 106      0668  1  !  OWN STORAGE:
 107      0669  1  !
 108      0670  1  !      NONE
 109      0671  1  !
 110      0672  1  !  EXTERNAL REFERENCES:
 111      0673  1  !
 112      0674  1
 113      0675  1  EXTERNAL ROUTINE
 114      0676  1      BAS$$STOP : NOVALUE,                           ! signals error
 115      0677  1      STR$FREE1_DX_R4 : STR$JSB_GETFRE,              ! Deallocate a string
```

```
 ; 116        0678  1        BAS$$UNWIND : NOVALUE,                          ! Unwind a frame
 ; 117        0679  1        BAS$HANDLER;                                    ! Marker for BASIC frame
 ; 118        0680  1
 ; 119        0681  1    !+
 ; 120        0682  1    ! The following are the error codes used in this module.
 ; 121        0683  1    !-
 ; 122        0684  1
 ; 123        0685  1    EXTERNAL LITERAL
 ; 124        0686  1        BAS$K_RETWITGOS : UNSIGNED (8),                 ! RETURN without GOSUB
 ; 125        0687  1        BAS$K_PROLOSSOR : UNSIGNED (8),                 ! Program lost, sorry
 ; 126        0688  1        BAS$K_NOTIMP : UNSIGNED (8),                    ! Not implemented
 ; 127        0689  1        BAS$K_FNEWITFUN : UNSIGNED (8),                 ! FNEND without FUNCTION CALL
 ; 128        0690  1        BAS$K_ERRTRANEE : UNSIGNED (8);                 ! ERROR trap needs RESUME
 ; 129        0691  1
```

```
131   0692  1  GLOBAL ROUTINE BAS$END_DFS_R8 (              ! end of DEF* frame
132   0693  1       ARGLIST                                 ! arg list used to set up the frame
133   0694  1       ) : NOVALUE BAS$INIT_LINK =
134   0695  1
135   0696  1  !++
136   0697  1  !  FUNCTIONAL DESCRIPTION:
137   0698  1  !
138   0699  1  !       Tear down a frame for a BASIC-PLUS-2 DEF*.
139   0700  1  !       All heap storage is deallocated.  The argument is the same
140   0701  1  !       as for BAS$INIT_DFS_R8, for validity checking.
141   0702  1  !
142   0703  1  !  FORMAL PARAMETERS:
143   0704  1  !
144   0705  1  !       ARGLIST.ra.v     List of information used to set up the
145   0706  1  !                        frame.  See BASIC-PLUS-2/VAX Description
146   0707  1  !                        of Generated Code for details.
147   0708  1  !
148   0709  1  !  IMPLICIT INPUTS:
149   0710  1  !
150   0711  1  !       The frame, as set up by BAS$INIT_DFS_R8.
151   0712  1  !
152   0713  1  !  IMPLICIT OUTPUTS:
153   0714  1  !
154   0715  1  !       NONE
155   0716  1  !
156   0717  1  !  ROUTINE VALUE:
157   0718  1  !
158   0719  1  !       NONE
159   0720  1  !
160   0721  1  !  COMPLETION CODES:
161   0722  1  !
162   0723  1  !       NONE
163   0724  1  !
164   0725  1  !  SIDE EFFECTS:
165   0726  1  !
166   0727  1  !       Deallocates the heap storage local to this DEF*.
167   0728  1  !
168   0729  1  !--
169   0730  1
170   0731  2      BEGIN
171   0732  2
172   0733  2      EXTERNAL REGISTER
173   0734  2          BSF$A_MAJOR_STG : REF BLOCK [0, BYTE],
174   0735  2          BSF$A_MINOR_STG : REF BLOCK [0, BYTE],
175   0736  2          BSF$A_TEMP_STG : REF VECTOR;
176   0737  2
177   0738  2      BUILTIN
178   0739  2          FP;
179   0740  2
180   0741  2      MAP
181   0742  2          ARGLIST : REF BLOCK [0, BYTE] FIELD (BAS$INIT_ARGS);   ! arg list
182   0743  2
183   0744  2      REGISTER
184   0745  2          FMP : REF BLOCK [0, BYTE] FIELD (BSF$FCD),     ! pointer to FCD
185   0746  2          PREV_FMP : REF BLOCK [0, BYTE] FIELD (BSF$FCD); ! previous FCD
186   0747  2
187   0748  2  !+
```

```
  188      0749    2  ! First cut back any GOSUB frames.  We wish to make the presence of
  189      0750    2  ! the GOSUB frame invisible except on traceback.
  190      0751    2  !-
  191      0752    2          FMP = .FP;
  192      0753    2
  193      0754    2      WHILE (.FMP [BSF$B_PROC_CODE] EQL BSF$K_PROC_GOSB) DO
  194      0755    2          BEGIN
  195      0756    3  !+
  196      0757    3  ! We have a GOSUB frame, remove it.  Note we do not restore any
  197      0758    3  !  registers it might have saved.
  198      0759    3  !-
  199      0760    3          BAS$$UNWIND (.FMP);
  200      0761    3          PREV_FMP = .FMP [BSF$A_SAVED_FP];
  201      0762    3
  202      0763    4          IF (.PREV_FMP [BSF$A_HANDLER] NEQA BAS$HANDLER)
  203      0764    4          THEN
  204      0765    3  !+
  205      0766    3  ! The previous frame is not a BASIC frame.  This is unreasonable
  206      0767    3  ! since GOSUBs should only be callable from inside a BASIC main
  207      0768    3  ! procedure.
  208      0769    3  !-
  209      0770    3          BAS$$STOP (BAS$K_RETWITGOS);
  210      0771    3
  211      0772    3          FMP = .PREV_FMP;
  212      0773    2          END;
  213      0774    2
  214      0775    2  !+
  215      0776    2  ! Make sure this is a DEF frame.
  216      0777    2  !-
  217      0778    2
  218      0779    2      CASE .FMP [BSF$B_PROC_CODE] FROM BSF$K_PROC_MAIN TO BSF$K_PROC_IOL OF
  219      0780    2          SET
  220      0781    2
  221      0782    2          [BSF$K_PROC_ONER] :
  222      0783    2              BAS$$STOP (BAS$K_ERRTRANEE);
  223      0784    2
  224      0785    2          [BSF$K_PROC_DEFS] :
  225      0786    3              BEGIN
  226      0787    3              0
  227      0788    2              END;
  228      0789    2
  229      0790    2          [BSF$K_PROC_MAIN, BSF$K_PROC_SUB, BSF$K_PROC_DEF] :
  230      0791    2              BAS$$STOP (BAS$K_FNEWITFON);
  231      0792    2
  232      0793    2          [INRANGE, OUTRANGE] :
  233      0794    2              BAS$$STOP (BAS$K_PROLOSSOR);
  234      0795    2          TES;
  235      0796    2
  236      0797    2  !+
  237      0798    2  ! Check to be sure that this is the correct exit.  This should
  238      0799    2  ! only fail if the user branches from one DEF* into the body of
  239      0800    2  ! another.
  240      0801    2  !-
  241      0802    2
  242      0803    2      IF (.FMP [BSF$A_INIT_ARG] NEQA .ARGLIST)
  243      0804    2      THEN
  244      0805    2  !+
```

```
245    0806   2  ! The argument lists are not at the same address.  This exit must not
246    0807   2  ! correspond to the entry.  Signal an error.
247    0808   2  !-
248    0809   2         BAS$$STOP (BAS$K_FNEWITFUN);
249    0810   2
250    0811   2  !+
251    0812   2  ! Deallocate any temporary string storage.
252    0813   2  !-
253    0814   2
254    0815   2     INCR COUNTER FROM 1 TO .ARGLIST [BAS$L_IN_NO_TST] DO
255    0816   2         STR$FREE1_DX_R4 (BSF$A_TEMP_STG [(.COUNTER - 1)*2]);
256    0817   2
257    0818   2  !+
258    0819   2  ! Deallocate local dynamic strings.
259    0820   2  !-
260    0821   2
261    0822   2     INCR COUNTER FROM 1 TO .ARGLIST [BAS$W_IN_NO_DST] DO
262    0823   2         STR$FREE1_DX_R4 (.FMP [BSF$A_STR_DESC] + (2*%UPVAL*(.COUNTER - 1)));
263    0824   2
264    0825   2  !+
265    0826   2  ! All done.  The 'RET' instruction done by the compiled code
266    0827   2  ! will cut back the stack, so we don't need to do it here.
267    0828   2  !-
268    0829   2     FP = .FMP;
269    0830   2     RETURN;
270    0831   1     END;                                      ! of BAS$END_DFS_R8
```

```
                                      .TITLE   BAS$END_DFS
                                      .IDENT   \1-004\

                                      .EXTRN   BAS$$STOP, STR$FREE1_DX_R4
                                      .EXTRN   BAS$$UNWIND, BAS$HANDLER
                                      .EXTRN   BAS$K_RETWITGOS
                                      .EXTRN   BAS$K_PROLOSSOR
                                      .EXTRN   BAS$K_NOTIMP, BAS$K_FNEWITFUN
                                      .EXTRN   BAS$K_ERRTRANEE

                                      .PSECT   _BAS$CODE,NOWRT,  SHR,  PIC,2


                 57          50  DO 00000 BAS$END_DFS_R8::
                                            MOVL    R0, R7                    ; 0692
                 55          5D  DO 00003    MOVL    FP, FMP                  ; 0752
                 06     E5  A5  91 00006 1$: CMPB    -27(FMP), #6             ; 0754
                            29  12 0000A     BNEQ    3$
                            55  DD 0000C     PUSHL   FMP                      ; 0760
      00000000G  00          01  FB 0000E    CALLS   #1, BAS$$UNWIND
                 52      0C  A5  DO 00015    MOVL    12(FMP), PREV_FMP        ; 0761
      50 00000000G  00          9E 00019    MOVAB   BAS$HANDLER, R0          ; 0763
                 50          62  D1 00020    CMPL    (PREV_FMP), R0
                            0B  13 00023     BEQL    2$
                 7E      00G  8F  9A 00025   MOVZBL  #BAS$K_RETWITGOS, -(SP)  ; 0770
      00000000G  00          01  FB 00029    CALLS   #1, BAS$$STOP
                 55          52  DO 00030 2$: MOVL    PREV_FMP, FMP           ; 0772
                            D1  11 00033     BRB     1$                       ; 0754
      07          01     E5  A5  8F 00035 3$: CASEB   -27(FMP), #1, #7        ; 0779
 001C         0010         001C         001C  0003A 4$: .WORD   7$-4$,-
```

```
        0010              0016              0010              0027      00042                        7$-4$,-
                                                                                                     5$-4$,-
                                                                                                     7$-4$,-
                                                                                                     9$-4$,-
                                                                                                     5$-4$,-
                                                                                                     6$-4$,-
                                                                                                     5$-4$
                          7E        00G  8F  9A 0004A 5$:   MOVZBL   #BAS$K_PROLOSSOR, -(SP)          0794
                                    0A       11 0004E       BRB      8$
                          7E        00G  8F  9A 00050 6$:   MOVZBL   #BAS$K_ERRTRANEE, -(SP)          0783
                                    04       11 00054       BRB      8$
                          7E        00G  8F  9A 00056 7$:   MOVZBL   #BAS$K_FNEWITFUN, -(SP)          0791
            00000000G     00            01  FB 0005A 8$:   CALLS    #1, BAS$$STOP
                          57        D8  A5  D1 00061 9$:   CMPL     -40(FMP), ARGLIST                0803
                                    0B       13 00065       BEQL     10$
                          7E        00G  8F  9A 00067       MOVZBL   #BAS$K_FNEWITFUN, -(SP)          0809
            00000000G     00            01  FB 0006B       CALLS    #1, BAS$$STOP
                          56            D4 00072 10$:  CLRL     COUNTER                          0816
                                    0F       11 00074       BRB      12$
      50                  56            01  78 00076 11$:  ASHL     #1, COUNTER, R0
      50        F8 A940   DE 0007A       MOVAL    -8(BSF$A_TEMP_STG)[R0], R0
                00000000G 00        16 0007F       JSB      STR$FREET_DX_R4
      EC                  56        30  A7  F3 00085 12$:  AOBLEQ   48(ARGLIST), COUNTER, 11$
                          57        28  A7  3C 0008A       MOVZWL   40(ARGLIST), R7                  0822
                          56            D4 0008E       CLRL     COUNTER                          0823
                                    0E       11 00090       BRB      14$
      50        E0 B546   7E 00092 13$:  MOVAQ    @-32(FMP)[COUNTER], R0
      50                  08        C2 00097       SUBL2    #8, R0
                00000000G 00        16 0009A       JSB      STR$FREE1_DX_R4
      EE                  56        57  F3 000A0 14$:  AOBLEQ   R7, COUNTER, 13$                 0829
                          5D        55  D0 000A4       MOVL     FMP, FP                          0831
                                       05 000A7       RSB
```

; Routine Size: 168 bytes,   Routine Base: _BAS$CODE + 0000

```
:  271         0832  1
:  272         0833  1 END
:  273         0834  1
:  274         0835  0 ELUDOM
```

;   COMMAND QUALIFIERS

;   BLISS/CHECK=(FIELD,INITIAL,OPTIMIZE)/NOTRACE/LIS=LIS$:BASENDDFS/OBJ=OBJ$:BASENDDFS MSRC$:BASENDDFS/UPDATE=(ENH$:BASENDDFS
;   )

; Size: 168 code + 0 data bytes
; Run Time: 00:06.1
; Elapsed Time: 00:16.1
; Lines/CPU Min: 8226
; Lexemes/CPU-Min: 29349
; Memory Used: 70 pages
; Compilation Complete